

MAKING IT TO WORK: TOWARDS EMPLOYMENT FOR THE YOUNG ADULT WITH AUTISM

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In the last few decades there has been an increase in the reported prevalence of autism and its correlates within what is now termed autistic spectrum disorder (ASD): from 20 in every 10,000 children being estimated by Wing and Gould (1979) to 91 in every 10,000 by the National Autistic Society (NAS) (1999). While changes in criteria may account for some of this it is accepted that such children are increasingly being identified and knowledge of autism is growing. Semi-structured interviews were conducted with nine teaching staff from seven different schools for children with special needs to elicit information in relation to preparing young adults with ASD for the world of work. Results indicated educational practices are being modified for children with autism. Currently the most specifically tailored packages are offered in schools for children with severe learning difficulties.

Introduction

Recent legislation has highlighted the need to examine education and employment provisions for all (not least those with special needs). Lawson (1999) proposes that all autistic children regardless of their deficits can lead rewarding and fulfilling lives with the appropriate training. How then do schools, who play a key role in leading pupils towards integrating into employment, prepare exceptional children such as those with autism?

Autism is widely viewed as a continuum of disorders, characterised by impairments affecting 'social interaction, communication and imagination' (Wing 1992), often accompanied by rigid, repetitive behaviour and varying levels of cognitive and intellectual ability. The NAS describes ASD as life-long developmental disorders affecting all aspects of the person's life, including a major impact on the ability to gain and sustain employment. IQ may be a strong predictor of future outcome (Howlin 1997).

Effect of autism on academic achievement and employment

The diverse nature, severity and range of features within ASD mean that each person's situation is unique. Some key features of autism and how these influence employment for young people with ASD are briefly outlined below.

Effects of social deficits

Aarons and Gittens (1992) and Taylor (1990) maintain that many autistic teenagers are aware of their social difficulties but are unable to make themselves more socially

acceptable, leading to feelings of inadequacy and rejection affecting motivation, thus academic performance and ability to function in society or maintain employment.

Effects of cognitive deficits and learning styles unique to the autistic population

In addition to uneven profiles, specific and varied deficits many autistic children also display unique learning styles and abilities. They have been classed as visual learners (Grandin 1995, Lawson 1999, Peeters and Gillberg 1999). Many exhibit organisational, attention, motivation and sequencing difficulties. They often have rote memory skills but experiences and memories are not stored in a 'meaningful framework' (Jordan 1990). Inability to apply knowledge, problem solve, grasp principles and generalise means that few leave school with qualifications, thus restricting employment options (Howlin 1997). Autistic children also incur many curricular difficulties (Siegel 1996). According to Jordan (1990) many exhibit hyperlexia, where reading ability supersedes comprehension. Standard reading assessments may not provide a true estimation, leading to unrealistic expectations. While rote mathematical skills may be a relative strength, problems often arise when maths problems are embedded in a linguistic or real life context. Teaching also often requires a child to learn through multiple modalities which overloads cognitive and sensory capabilities of a child with concrete thinking and single channel processing.

Effects of challenging behaviours

Behavioural difficulties cause problems in integrating into school and can be misinterpreted. Teachers must be aware of potential triggers that generate challenging behaviour. 'Work placement' is a common stepping stone to the world of work and gives young adults a flavour of what jobs entail. Finding placements for adolescents with behavioural problems and meeting their needs is challenging and in some instances teachers or careers staff may feel that unpredictable pupils put work schemes at risk.

Effects of communicative deficits and associated deficits

Language understanding and use is central in progressing academically and into employment. Jordan and Powell (1995) note that teachers often use abstract language concepts, e.g. metaphors and irony as children grow older, causing problems for autistic children who have literal understanding. While structure helps them to cope with their environment, inability to use their free time constructively can have a severe impact on independent functioning. Social naiveté may also contribute to unawareness of danger (Aarons and Gittens 1992) and poor domestic and hygiene skills (Taylor 1990). Like many adolescents they crave independence but many do not have necessary coping skills.

Educational provision and approaches

Despite recent policies towards integration, most ASD children are still currently placed in schools for pupils with severe (SLD) or moderate learning difficulties (MLD). Behaviour modification and structured environment approaches tailored to a child's individual needs are common. The Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH) approach developed by Schopler is popular (Mesibov 1998). Howlin (1997) comments that every education facility has advantages and limitations. The most effective educational placement is one which can assess and meet the individual child's social, communicative and educational needs and whose aim is to help achieve optimum level of independence. To achieve independence individuals must learn how to cope with unexpected changes. She believes this can be achieved by anticipating changes and preparing the autistic child by using visual cues.

Preparation for the transition to employment or further education

Howlin (1997) cites three types of occupation available to pupils with autism, i.e. supported, sheltered and competitive employment and believes that honesty is the best policy with employers and helps them prepare for and facilitate the individual. Luce and Dyer (1995) advocate assessing any new environment to which the pupil is transferring. Employers and staff should be informed of a student's abilities and difficulties. Expectations must be realistic. Employers' support is a key factor in job success and ideally the full support of parents is also needed.

The present study: methodology

Special schools in a greater urban area were identified as teaching children with ASD. Inclusion criteria required a school roll in excess of 50 and experience with school leavers. Clinical medical officers and schools confirmed known ASD persons were not normally placed in mainstream schools therefore none was included in the study. The special schools were run by three education boards. Nine were approached and seven agreed to take part. The main features of respondents and schools are listed in table 1. A semi-structured interview format was devised, piloted and modified slightly. Using open questions data was collected on schools' policies, education programmes, provision for dealing with pupils with autism, preparation of pupils for the work context and processes for integration into employment. Information on involvement of parents was also elicited. Data from each interview were transcribed and analysed using a form of content analysis, coded, themed and compared across transcripts and school types where possible.

Table 1. Participants: characteristics of staff interviewed and the schools

	Respondent	Pupil type	Teacher/class info.	School characteristics
A	School Principal	SLI		80 pupils; 2 ASD
B1	Special ed. teacher	SLD	TEACCH trained; Young autistic pupils	140 pupils; 21 ASD
B2	Special needs teacher	SLD	Teaches 16 years+	As above
C1	Special ed. teacher	SLD	TEACCH class for younger children	68 pupils approx 12 ASD
C2	Special needs teacher	SLD	TEACCH trained Teaches 16 years +	As above
D	Special ed. teacher	SLD	TEACCH trained 8 autistic children	pupils 8-17 years approx 26 ASD
E	School Principal	MLD/SLI		165 pupils; 2 ASD
F	School Principal	MLD		250 pupils 3 with ASD
G	Special ed. teacher	MLD	TEACCH trained	185 pupils; 4-5 ASD children per year group

Results and comments

Educational policies, theoretical bases and assessment for intervention

While criteria for school A (SLI) excluded children with a diagnosis of autism (by definition on grounds of IQ) it did have several with pragmatic language disorder and Asperger's syndrome. All others accepted children diagnosed with autism. Schools for children with MLD and SLI had no specific policies for children with ASD. Every school with the exception of F (MLD) used TEACCH to some extent. Other approaches were also used and seen by some as more suitable for certain ASD children, particularly older ones who needed to be challenged to accept change. Assessment tools varied. Only SLD schools based their individual education plans (IEPs) on psycho-educational profiling (TEACCH-based). Others based them on other school and speech and language therapy (SLT) assessments.

Modification made to learning environment, dealing with challenging behaviours

All schools except E (MLD) had modified teaching and physical environments specifically for ASD children. Those dealing with younger children provided a high degree of structure. Those with older children followed similar but more flexible methods with emphasis on practical skills. B2 stated that the classroom was only used as a base and the education of seniors was primarily focused on promoting work and life skills, independence and dealing with change so that 'they can make sense of the community around them'. All were obliged to follow the national curriculum for under 16s and taught functional maths, time skills and practical-based literacy, e.g. reading signs and social stories. Only SLD schools attempted to modify the curriculum specifically for their pupils with autism - through 'stepping stones' for younger children and through social, independent and vocational skills for older pupils.

For dealing with challenging behaviours (CB), behaviour modification approaches were cited (as were reasoning techniques for older autistic pupils). Two commented that CB necessitates reassessment of their teaching practices. Two from SLD schools viewed CB as a communication deficit. E (MLD) experienced little challenging behaviour, underlining the differences between SLD/MLD in types of pupils and teacher experience.

Developing reasoning skills, awareness of danger and encouraging leisure skills

Inferencing and reasoning skills were facilitated in schools by a range of strategies. The SLI school said these were tackled jointly by SLTs and class teachers. All stated that danger awareness was incorporated into educational provision. Six stated road traffic awareness and one domestic safety. Helping autistic pupils cope with free time varied considerably across schools. One from an MLD school stated that 'free time probably doesn't exist in our system'. Breaks are constantly structured with supervised activities for younger children and clubs for older students. B2 and F used semi-structured leisure time while only one (SLD) had unstructured free time within class.

Development of social skills, communication skills and facilitating independence

All teachers stated that social skills were extremely difficult to teach autistic pupils. Social rules were taught in a highly structured and visual fashion, e.g. through role-play, incorporating turn-taking, social address and inter-personal distance. Developing friendships and team working were tackled through designated projects or activities. Independent skills focused on hygiene, personal appearance, shopping skills and telephone use. Several practised life skills outside the school environment, e.g. in cafés.

and shops and independent travelling, often collaborating with parents. Facilitating communication was done through signing, simplifying teacher language, modifying tone of voice and gestures. All teachers worked with SLTs and wanted more therapist input.

Academic and work opportunities available to pupils

Schools acknowledged the value of qualifications and of vocational training. The majority of schools provided opportunities to gain qualifications at appropriate levels. National Vocational Qualifications (NVQ) and City and Guilds were offered at SLD schools. MLD schools offered a mixture of academic and practical qualifications, e.g. GCSEs and NVQs. The SLI school only offered academic qualifications, graded at an appropriate level for their pupils' needs. Four offered internally accredited certificates and personal educational and work profiles.

Teachers working in SLD schools stated that vocational skills were taught to their students with ASD. In B even younger children experienced the teaching of simple packing and office skills. Post-16s are taught vocational skills in SLD schools, and given the opportunity to attend part-time vocational courses in further education (FE) colleges. MLD schools invited guest speakers to give talks on various aspects of employment. The SLI school conducted vocational training in the last year of school. All four schools which took ASD children beyond 16 years offered them work experience ranging from one to eight weeks. Schools worked with the careers service, to prepare their students for work experience.

Contact with parents and transition from school to employment or FE

All schools reported to value close formal and informal collaborative practices with parents. One SLD and one MLD school gave parents the opportunity to learn structured educational practices used within the classroom. Both also helped incorporate TEACCH techniques into the home environment if requested by parents.

Into the world of work

Careers officers are primarily responsible for finding suitable placements and work experience (usually routine, manual jobs). SLD schools also maintained strong links with adult centres to which students transferred. All types of schools agreed that finding suitable placements was problematic. Sympathetic employers, ranging from supermarket chains to child-care facilities, led to most successes. B2 felt that companies were willing to accept their students if fully informed about their skills and difficulties (concurring with Howlin 1997). Various levels of support to pupils on work experience were offered from the school or training agency, some accompanying the student for the first week.

Conclusions

Did they make it to work? Employment and educational attainments of past pupils

Past pupils with autism from all SLD and MLD schools studied were reported to have integrated into adult education centres. Two SLD pupils with ASD are in their early twenties and still attending FE colleges, one employed one day a week at a bottling plant. Three pupils with ASD, all now in mid-twenties, have left the SLI school. Two were currently employed at the time of the study and had been for some time, one as a driver, the other in a storeroom. The parents of the third felt he was too vulnerable. D reports that three children successfully transferred from the TEACCH classroom into the main body of the school but one child was unsuccessful.

It certainly appears that special schools are working hard to equip autistic students with the necessary skills to integrate and function in employment, though to date success is limited. As one teacher put it, 'Jobs? .. You have to do the best you can and hope against hope someone, somewhere will give them a chance .. but sadly our children are often at the back of the queue'. Of those interviewed, schools catering for children with SLD appear to be modifying their practices for ASD more than those schools for MLD but they have had much longer experience in dealing with autism. Many of the staff were trained specifically in special needs rather than as mainstream teachers. Also, there may be greater scope for adaptation of the national curriculum in SLD schools than where pupils are being educated alongside others towards formal examinations. ASD children who attended the school for children with SLI were by definition at the 'higher functioning' end of the spectrum and had some success in gaining employment which bears out the view of some that IQ is a strong predictor of outcome. However as the identification of ASD increases and integration policies are implemented, no doubt many more will be placed in mainstream and other schools. All types of schools are likely to have to examine and revise provisions for young students with ASD and prepare them for employment and further education.

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Clinical differential analysis of persons with autism in a work setting: A follow-up study

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The purpose of this study was to investigate the differences in clinical symptomatology between two groups of adults with autism who participated in two modalities of employment: supported vs sheltered. This study was part of a larger study designed to analyze the variables that predict the success of people with autism in employment settings. The results suggested that a possible relationship existed between clinical evolution of people with autism and modality of employment. Specifically, the sheltered group scored higher than the supported group in total CARS scores in 1999, and the total score of the sheltered group in 1999 was higher than total score in 1996 for the same group. The total score of the supported group, on the other hand, was the same in 1996 and 1999.

Keywords: Supported employment and autism

1. Introduction

Autism is a developmental disability that affects communication, behavior, learning and cognition. The principal characteristics of the disorder are: impaired verbal and nonverbal communication; deficits of socialization and atypical responses to sensory stimulation. Other associated characteristics include: difficulty handling change; associated mental retardation (70–80%); rituals and compulsions; deficits of attention, etc. [1]. Autism can occur with other disabilities such as deafness, Fragile X Syndrome, and epilepsy. People with

autism vary in intellectual and clinical characteristics as well as in abilities. Autism is a life-long disorder that begins in early childhood or is congenital. Current prevalence of autism is reported to be between 0.7 and 15.5 per 10,000 births, with a median value of 4.8. There is a consistent excess of males over females (2–4.1) and there does not appear to be any systematic geographic or socioeconomic variation [2].

Fortunately, autism is not a vocational disorder. However, adults with autism have typically not been considered suitable candidates for employment in the work force [7], and, despite the explosion of information published on the vocational training and employment of people with severe disabilities, very little research has been published on competitive employment for people with autism [2]. People with autism can work, and even those with severe problems can hold a variety of jobs [7,8]. Although individuals with autism remain underrepresented in supported employment programs, the experience of the last decade has demonstrated that people with autism can benefit from supported employment programs [3–5,8]. Much literature has been written about techniques for working with individuals with disabilities in the community, specifically in work settings. However, there is little literature which focuses on analysis of differential efficacy between various employment modalities.

This article addresses the results from a clinical perspective of a supported employment program applied to people with autism in comparison with a sheltered work program applied to another group of the same pathology.

The objective of this research was to analyze the differential impact of two modalities of work (supported versus sheltered work) in the evolution of clinical symptomatology between 1996 and 1999. It was hypothesized that the group enrolled in the sheltered workshops services would have more pronounced autistic symptoms at the end of the program than the group from supported work.

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2. Method

The data for this investigation were collected via interview with caretakers, therapists and families of people with autism by the first author in three associations within the European Community (Fundación Menela de Vigo, Spain; Asociación Nuevo Horizonte de Madrid, Spain; and Eltern für Integration of Berlin, Germany.) Details related to the participants, instrumentation, and analysis procedure are described in this section.

2.1. Participants

Fifty-five individuals with the clinical diagnosis of autism (DSM IV, 1994) participated in this study. Informed consent was obtained from each individual or legal guardian where appropriate. The individuals were divided into two groups: Sheltered Workshop (SHW) and Supported Work (SPW).

2.2. Characteristics of groups

a. Sheltered workshop group: Twenty-six individuals with autism included in a SHW program were matched to the twenty-five individuals in SPW programs, attending to sex, total score on Childhood Autism Rating Scale (CARS), and degree of intelligence. The average age of the SHW was 21.07 years; 69.23% were male and 30.77% female. The average IQ was 55.52; it was approximately equal for the two groups. Moreover, twelve subjects had an additional diagnosis of epilepsy.

b. Supported work group: Twenty-one people with autism were selected to participate in the Supported Work Project. All jobs were located in the community and no more than two individuals with autism were placed in the same work place.

The community jobs were predominantly in service sectors and included: food services, waiters, recycling and delivery, retail, gardening, industrial laundry, agriculture and cattle-raising, etc. All subjects worked between 15 and 30 hours per week and were paid competitive wages based on rates for non-handicapped workers in training.

A job coach was assigned to each worker with autism. The supported employment subjects were selected according to the following criteria: sheltered workshops enrollment prior to participation in supported work program; diagnosis of autism; no severe behavior problems; acceptable professional and vocational abilities; informed consent.

Table 1
Demographic characteristics of the sample in 1996

	SHW	SPW
Age	$M = 21.07$ $SD = 4.18$	$M = 21.64^a$ $SD = 3.75$
IQ Leiter ¹	$M = 55.52$ $SD = 14.43$	$M = 57.41^b$ $SD = 15.01$
CARS ²	$M = 35.26$ $SD = 6.51$	$M = 32.23^c$ $SD = 8.59$
Males	18	21
Females	8	4

¹Total score of IQ Leiter in 1996.

²Total score for CARS in 1996.

^a $t = -0.51$; $p = 0.619$; *n.s.*

^b $t = -0.42$; $p = 0.679$; *n.s.*

^c $t = 1.45$; $p = 0.152$; *n.s.*

The average length of community employment was 30 months. The average age was 21.64 years; 84% were male and 16% female. The average on CARS was 32.23; and the average IQ was 57.41. Ten subjects had an additional diagnosis of epilepsy.

2.3. Instrumentation

The Childhood Autism Rating Scale (CARS) is an instrument for screening and diagnosis of autism [6]. It covers 14 domains generally affected by severe problems in autism, plus an overall category of "impression of autism". The discriminative power of the instrument has been good if used to identify individuals with autism in populations with developmental disorders in adolescence and adult life [6]. A Spanish translation of CARS has been used in this study.

3. Results

The sheltered work group was compared with the supported work group using repeated measures of analysis of variance.

The results shown in Table 2 allow us to confirm the following conclusions:

- a) At the beginning of this study, in 1996, there is no difference between total CARS scores of the sheltered work group and the supported work group ($F_{(1,51)} = 2.13$; $p = 0.15$, *n.s.*). However, the group that participated in sheltered work showed more pronounced symptoms of autism in 1999 ($F_{(1,51)} = 8.60$; $p < 0.005$).

Table 2
Mean and standard deviation scores for CARS for
sheltered and supported groups

Type of work	CARS96	CARS99
Sheltered work (SHW)	$M = 35.26$ $SD = 6.51$ $n = 29$	$M = 38.26$ $SD = 7.40$ $n = 29$
Supported work (SPW)	$M = 32.23$ $SD = 8.59$ $n = 24$	$M = 32.19$ $SD = 7.26$ $n = 24$

- b) The group integrated in the supported employment program shows no variation in their pathology between 1996–1999 ($F_{(1,51)} = 0.02$; $p = 0.71$). The sheltered work group, on the other hand, showed higher pathological severity ($F_{(1,51)} = 8.11$; $p < 0.006$).

4. Discussion

The purpose of this study was to examine differences in severity of autistic pathology, evaluated with CARS, between two groups of adults with autism enrolled in sheltered workshops services and supported work programs.

Traditionally, workers with mental retardation have held jobs in services, horticulture, food preparation, etc. Characteristics of workers with autism often preclude such jobs. Problems relating to reliance on routine, lack of communication and social skills, difficulty changing tasks through day, etc., make jobs in these traditional fields difficult for workers with autism [7]. The sheltered workshops were the alternative for people with autism. But in the 1990s this perspective has changed and individuals with autism work in diverse programs of supported employment.

In general, the results suggested that a possible relationship existed between clinical evolution of people with autism and modality of employment. Specifically, the sheltered group scored higher than the supported group in total CARS scores in 1999, and the total score of the sheltered group in 1999 was higher than

total score in 1996 for the same group. The total score of the supported group, on the other hand, was the same in 1996 and 1999.

People with autism offer many challenging characteristics and behaviors that make them appear to be unsuitable candidates for competitive employment [8]. Our experience has demonstrated that having autism does not mean a person is unemployable; rather, people with moderate autism showed excellent results in supported employment programs and their pathology did not change in the three year period up to follow-up. However, sheltered workshop group autistic persons showed a deterioration in their pathology in this period.

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Where We Are Now: Perspectives on Employment of Persons with Mental Retardation

William Kiernan

It has long been recognized that employment is a critical factor in independence and community integration. This article overviews the status of employment for people with mental retardation, considers emerging approaches to enhancing employment outcomes, and presents some of the future opportunities that will affect employment outcomes.

Employment is a means to economic independence, a route to social identification, and a source for personal networking for most adults in U.S. society. In our adult years, we define ourselves by our careers, support our lifestyles through our wages, and develop our friendships through our place of work. Unfortunately, for many persons with mental retardation, employment and the associated benefits have not been a realistic option. In this article, I review the status of employment for these individuals, consider some of the emerging approaches to enhancing employment of persons with mental retardation, and present some of the future employment opportunities for them.

Status of Employment

In the early 1950s the concept of employment for persons with mental retardation did not receive a great deal of consideration. It was felt that there was a need for a highly structured and protective setting where persons with mental retardation could work at their own pace,

produce on routine and repetitive tasks, and be reimbursed based on their individual level of productivity. The development of sheltered workshops, while advancing the concept of employment for persons with mental retardation, did not afford the individual worker an opportunity to become economically self-sufficient (Whitehead & Marrone, 1986). Given the very nature of the sheltered workshop, co-workers were all individuals who had a disability; thus, the chances for developing peer networks involving persons other than those with disabilities was unlikely.

The emergence of the sheltered workshop as an employment option for persons with mental retardation was embraced by many of the local Associations for Retarded Citizens (then called Associations for Retarded Children). The number of sheltered workshops grew rapidly in the 1950s and 1960s, with placement in a sheltered workshop felt by many to be the most logical and desirable outcome for persons with mental retardation. Industry began to access this labor resource through subcontracts for production with sheltered workshops.

For many persons with mental retardation, employment in a sheltered workshop was considered as the end goal rather than a transitional goal (Whitehead, 1981).

For a few, however, the concept of movement from the sheltered workshop to a "real" job was felt to be a possible sequence. The focus of the training in the sheltered workshop was on the development of work-based skills (following simple instructions, being able to appropriately complete the sequenced steps in a multistep task, and demonstrating an ability to attend to a work task for extended periods of time). Once these skills were mastered, the individual would be considered a candidate for a real job. Movement from the sheltered setting was limited, however, due in part to the lack of expectation on the part of professionals that persons with mental retardation could work in a real work setting, and in part to parents' concerns about the individual's potential loss of benefits or social isolation in the competitive workplace.

In the early 1970s it became apparent that not many people with mental retardation were moving from the sheltered setting to a real job. Whereas the concept of step-by-step training progressing from prevocational through skills training made some sense in theory, in actuality the skills that were developed in the sheltered workshop had little relevance to the

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tasks preformed in a real work setting. Additionally, the transfer of skills learned in a sheltered setting to the real work setting was minimal for individuals with mental retardation. Recognizing that persons with mental retardation could work, that skills learned in one setting were seldom generalized to another, and that the economy was shifting from a manufacturing to a service industry, a number of researchers began to raise questions about the efficacy of the sheltered workshop approach to employment supports and employment training (Boles, Bellamy, Horner, & Mank, 1984; Wehman, 1981).

At about this time, the first model demonstration programs utilizing a place-and-train approach (as opposed to a pre-training and placement model) emerged. The concept of supported employment was based on what was known about how persons with disabilities learned, and how the economy was changing, and a recognition of the benefits of a more inclusive work setting for persons with mental retardation. Supported employment called for the placement of individuals into a real job by completing an analysis of job tasks and providing training for the individual in an actual workplace (Kiernan & Stark, 1986). Supported employment over the past decade has provided employment opportunities to more than 200,000 persons with disabilities nationally (Mank, 1994; McGaughey, Kiernan, McNally, Gilmore, & Keith, 1994; Wehman & Kregel, 1995). As an outgrowth of these initial demonstrations, many of the community rehabilitation programs soon developed supported employment options for persons served in their sheltered workshop and rehabilitation training programs. Although the initial intent of supported employment was to assist those individuals with more severe disabilities in entering employment, to date most of the persons served through supported employment have been persons with less significant disabilities (Kiernan & Schalock, 1997; Mank, 1994; Wehman & Kregel, 1995).

The accomplishments since the mid-1980s in supported employment have been significant, yet there continue to be

many concerns about the nature of the population served, the extent of the support required, the role of the employment training specialist (or job coach), and the nature of the jobs realized through supported employment (Kiernan & Schalock, 1997; Mank, 1994). The adoption of supported employment has brought to the forefront the recognition that employment is a realistic option for persons with mental retardation. The original intent of supported employment—to provide employment opportunities for individuals with severe disabilities—has been somewhat compromised, in that most of those served in the current supported employment programs are persons who have less severe disabilities. Various individuals have raised concerns about the need to maintain a focus on serving individuals with more severe disabilities in supported employment programs (McGaughey et al., 1994; Wehman & Kregel, 1995). A growing concern also revolves around the nature of the jobs accessed and the structure of the supports provided through supported employment. The vast majority of persons entering real work settings, through either supported or competitive employment, enter jobs in the food services or cleaning areas. Many of these positions are of a part-time nature and seldom offer wages above the minimum wage or provide benefits, such as health-care coverage or paid vacations (Temelini & Fesko, 1996). Entry into these jobs, although not atypical for most new workers in general, is often viewed as the *final* placement for the supported employee. Career growth and development is not a topic of discussion for persons with mental retardation.

The nature and source of the supports provided through supported employment programs have also come under examination and debate in recent years. The introduction of on-site supports has been noted by many as key to the success of individuals with mental retardation in the workplace. In many instances, the need for additional training is essential, yet there are concerns regarding the practice of relying on the services of outside trainers, rather than using supports

that exist within the workplace—the natural supports of the job (Hagner & Dileo, 1993; Nisbet, 1992). Paralleling this concern is the growing recognition of the need to incorporate the individual into not only the production but also the social and cultural aspects of the workplace. Success in the workplace is measured not exclusively by the individual worker's level of productivity but also by his or her level of satisfaction and the level of inclusion of the employee in the nonwork aspects of the job (Kiernan & Schalock, 1997).

There is a growing recognition of the need to look at the inclusion of the person with mental retardation in the production and social aspects of the workplace (Chadsey & Shelden, 1998). An expanding body of research is supporting the use of naturally occurring supports (e.g., co-workers as trainers and support resources, employer-based training services) in the assimilation of the worker with mental retardation into employment (Mank, 1994). These data support the concept that employers and co-workers are willing and able (often with some assistance from a job coach) to assume a leadership role in training and supporting the worker with mental retardation on the job. These studies serve also to support a redesign of the relationship between employers and community rehabilitation professionals, as well as between employees with mental retardation and co-workers. The technology for, and the approaches to, supporting persons with mental retardation in integrated employment are available. The struggle is not one of *how* but rather of *when* programs and services will focus on employment as the goal for persons with mental retardation. Although significant accomplishments in increasing both the awareness and the actual number of persons with mental retardation entering employment have been realized, there continues to be a strong reliance on utilization of sheltered employment programs nationally. Data on the rates of employment of persons with disabilities in real work settings and the number of persons continuing to enter segregated employment settings reinforce the need

for systemic changes and a continuing focus on facilitating entry into real jobs for persons with mental retardation nationally (Gilmore & Butterworth, 1996; Ma & Gilmore, 1997; McGaughey et al., 1994).

Emerging Approaches to Enhancing Employment

Over the past two decades a number of factors have influenced the employment of individuals with mental retardation and other developmental disabilities. Some of these relate to the evolution of the American workforce, whereas others reflect changes in the systems that support individuals with mental retardation.

The Changing Workplace

A current unemployment rate averaging 4%, with some areas of the country reporting less than 1%, would imply that there is a growing need for workers in all sectors. In fact, many employers are considering workers who in the past would not have been regarded as part of the labor pool. Companies are offering supports to workers in the form of more flexible work schedules, home employment, nontraditional benefits plans, shared job options, and supports for workers who need personal or family assistance. In a few instances, employers have expanded human resource services, offering case management, childcare, and housing assistance (Kiernan, Marrone, & Butterworth, 1999). Although these are the exceptions, it would seem that, given the current shortage of employees, opportunities to increase the employment for persons with mental retardation are significant. Unfortunately, the rate of unemployment (or "not in the labor force") for persons with mental retardation hovers around 70% (Louis Harris & Associates, 1995; McGaughey et al., 1994).

Employers, while asking for assistance, are having difficulty making the connection between the untapped labor resource of persons with mental retardation and their company needs. A more

direct link between employers and the public rehabilitation system (including community rehabilitation programs) is essential. Participation in business associations (the Chamber of Commerce, Associated Industries, and local trade associations) will increase visibility, but, unless there is more aggressive marketing and outreach, such participation is unlikely to lead to real jobs for persons with mental retardation. Community rehabilitation providers must understand employer needs, assist in responding to those needs, and link the labor resources available through these programs to the job duties in the company. The development of a strong employer relationship will open doors to jobs, but matching individual skills to a company's job needs is essential to effective job placement.

At the federal level, the passage of the Americans with Disabilities Act of 1990 (ADA) served to substantially increase public awareness of persons with disabilities as potential and qualified employees. This legislation in many ways has served to increase both awareness of and concerns regarding the employment of persons with disabilities. The initial response by many companies was not "How can we open the doors of opportunity?" but "How can we establish the avenues of compliance to the law?" Concerns about litigation have given way to strategies for expanding the intent of the ADA to real job opportunities. Several studies have documented changes in larger employers regarding the employment and support of workers with disabilities (Blanck & Marti, 1997). The ADA served as a lever; the next step is the translation of that opportunity into real jobs for persons with mental retardation.

The changing workforce, the increased emphasis on equality and opportunity, and the recognition that there is a need for a closer working relationship between employers and those charged with facilitating the entry into work of the non-traditional worker are all elements that in the coming years will create more jobs for persons with mental retardation. Furthermore, some systemic changes are occurring that will also facilitate increased employment opportunities.

Changes in the System

Concerns of family members, consumers, and many professionals revolve around the loss of currently provided health and cash assistance, apprehension about the types of jobs offered, the level of wages paid, and the potential instability of jobs in the open market, which are all reported as significant barriers to the employment of individuals with mental retardation and other developmental disabilities (Fallavollita, 1997). Other concerns reflect issues of inadequate transportation, the needs for a highly customized set of job duties, and apprehension about loss of friends made in the current sheltered or nonwork setting. Each of these barriers has merit in some way and contributes to the significant apprehension expressed by consumers, family members, and others regarding employment.

Several strategies have been proposed, and some implemented, that would begin to address these concerns. Changes in the Social Security Supplemental Security Income (SSI) program through work incentives have provided a more rational approach for dealing with the movement from public benefits to real jobs (National Academy of Social Insurance, 1996). These work incentives have opened the door to retaining cash benefits when wages are low, as well as providing an opportunity to maintain health-care benefits when employer-sponsored benefits are either unavailable or inadequate. These work incentives are not currently available for individuals on Social Security Disability Insurance (SSDI); however, legislation has been proposed to modify the SSDI policies to allow for a more gradual reduction in cash benefits and a way to remain on health-care benefits in those instances where such benefits are unavailable or inadequate in the workplace.

The SSI work incentives have been in place for a number of years, yet they are poorly utilized. There is a need not only for the establishment of more effective marketing of these incentives but also for a change in the basic tenets of Social Security, with a stronger focus on employ-

ment as a realistic and desirable goal for persons with disabilities. Current application processes for SSA benefits require extensive documentation of incapacity, with no reference to eventual return or entry into employment by a potential SSA applicant. It is thus with the mindset of complete dependence that the individual with a disability approaches the SSA application process. Once on the rolls, there is little incentive to exit, given the historic difficulty in gaining initial eligibility status. Exit from the SSA rolls must be made easier and more desirable and can be accomplished through the development of easy-on/easy-off policies, a commitment by SSA to encourage entry into employment, and the development of demonstration programs that will show that return or entry into a job can lead to greater economic gain and security for the individual. The current perception among many is that there is less gain and greater risk to the individual who enters or considers entering employment, given the perceived loss of benefits.

The changes proposed in SSA, and a growing awareness that this system can be used to enhance employment, will significantly allay the concerns of consumers and family members when considering employment. Flexibility in benefit reductions as a result of earned income, continuation of medical coverage, and easy return to benefits after job changes will remove long-standing barriers to employment.

In addition to the changes in SSA through work incentives for the individual, some systemic changes that have occurred over the past 5 years may have a positive impact on the employment of persons with mental retardation. With most state Mental Retardation and Developmental Disabilities agencies, day and employment services are provided through a network of community-based rehabilitation providers. These typically not-for-profit programs contract with the public agency and provide services, often on an ongoing basis, to persons with mental retardation. Through a system of complicated reimbursement policies and practices, the federal govern-

ment partially reimburses states for the costs associated with maintaining individuals in community settings through the Home and Community Based Waiver program. This system of reimbursement was designed to prevent institutionalization, with the states receiving a portion of their expenses for serving persons who have been, or may be, at risk of institutionalization, in community-based programs rather than institutions. Initially, employment supports were not considered a reimbursable expense by the Health Care Financing Administration (HCFA) of the U.S. Department of Health and Human Services. However, a few years ago, HCFA regulations were expanded to include supported employment as a covered service for individuals in the state waiver program.

With the strong focus in many states on maximizing federal reimbursement, the change in regulations relating to reimbursement of supported employment services has the potential for greatly increasing state agencies' interest in the supported employment system. The opportunity to share expenses for supported employment should encourage states to begin to stipulate that supported employment is the desired outcome for individuals served in day and segregated employment.

The changes in reimbursement for supported employment, while offering promise for increasing job opportunities for more persons with mental retardation who are entering the workforce, do not address the concerns of a fragmented system of services at the state and local levels. Current services often respond to needs in one life area (work, community living, recreation, or health), with little coordination across all major life areas. Furthermore, the services offered in one area are often in conflict with those offered in another. If an individual enters employment on a schedule other than the traditional Monday through Friday, 9 to 5, routine, there is often great confusion and, typically, reluctance on the part of the community-living staff to support this type of employment. Recreational services continue to be organized in small, specialized groups, with infre-

quent utilization of the local recreational services and options in the community. The inflexibility of the current system in accommodating differences in work schedules and preferences in recreational activities limits the employment options for persons with mental retardation. More creative options, such as home ownership and shared apartments, as well as flexible and individually designed supports, have begun to address the rigidity of typical community services. Programs focusing on person-centered planning, personal networks, and community inclusion will provide for the development of services and supports that reflect individual preferences and interests, rather than mere availability of services.

Service integration within employment and training programs likewise has been identified as a major concern. This has been a front-burner issue in Congress and at the state level for the past few years. Several reports have noted the need to integrate the various employment and training programs (Fallavollita, 1997). The recently passed Workforce Investment Act of 1998 legislatively brings together many of the employment and training programs of the federal government, encourages a more integrated approach to employment and job placement at the state and local levels, and calls for the establishment of a single employment service (One-Stop Career Centers) at the community level. The One-Stop Career Center design seeks to respond to the fractured employment programs of the current system. Although there is some apprehension regarding the movement toward a more generic employment and training system, with advocates fearing that persons with mental retardation will again go unserved, there is growing recognition among many of both the capacity of persons with mental retardation to work and their interest in doing so. This awareness, and changing expectations by consumers, family members, and others, help to ensure that individuals with mental retardation are served through One-Stop Career Centers.

The advantages to a more integrated employment and training system would seem to outweigh the disadvantages

from the perspective of a more comprehensive system of job identification and placement. The concerns about the possibility of "creaming," where individuals with severe disabilities are not served by a more generic system because either the system does not have the capacity to do so or such services are perceived as too costly, are real and must be addressed through both legislation and regulation. The assurance that any One-Stop system will respond to the needs of all job seekers has to be a core part of any reform of the employment and training system at the federal and state levels (Connolly, Kiernan, & Marrone, 1997).

In response to the interest in development of a more integrated approach to services, several federal initiatives have been developed. Both the Social Security Administration and the Department of Education's Rehabilitation Services Administration have just begun to support projects that would encourage states to link services and supports together and develop a more integrated approach to supporting persons with disabilities. These demonstration approaches are designed to facilitate new ways in which a state can combine resources and develop systems that will respond to the individual interests and preferences of persons with disabilities. These projects, although in their developmental stages, can be viewed as an initial step in establishing a single point of entry and a single service delivery system.

In addition to the interest in systemic changes, there is also a growing movement to support greater consumer control via the use of vouchers. The intent of the voucher system of service delivery is to offer control over the allocation of resources by the consumer. Although there have been several versions of vouchers, or individual payment systems, there is a growing interest in developing a system whereby the individual with a disability is in full control over the allocation of money (Callahan & Mank, 1998). The Social Security Administration's proposed ticket system is a legislative initiative in which consumers will have an ability to control resources and select service providers and supports that will meet

their individual interests. The concept of vouchers, though not new, is an area that many consumers and families feel can have a considerable impact on the redesign of services, both locally and nationally.

Changes in Approach: Emerging Practices Leading to Innovation in Employment

As noted in the initial portion of this article, employment for persons with mental retardation has been a major focus only for the past three decades. Initially, efforts were placed on development of segregated training centers, specifically, sheltered workshops and craft centers. This was followed by a recognition of the advantages to placement and training through the on-site supports of a job coach or employment training specialist, with the development of supported employment. Concerns about placement and inclusion in the workplace led to a more recent interest in the development of strategies that would access naturally occurring supports for persons with mental retardation and other developmental disabilities at work.

Natural supports reflect services, supports, and resources that are typically available in the workplace. In some instances a natural support may be the utilization of a co-worker as a trainer, whereas in others it may be a shared ride to work, a simple modification in job tasks, a change in the work environment, or the development of a mentor-protégé relationship at work. Initially, some felt that the adoption of natural supports would mean that there was no need for the presence of a job coach in the workplace, giving rise to concerns that the worker with a disability would not be adequately supported in learning the work tasks. Some even implied that the intent of natural supports was to reduce costs by abandoning the worker with a disability too early in the employment placement and supports process. More recently, as the concept of natural supports has taken hold, it has become clear that the goal of natural supports is not to save money (though in some instances

that may be the case) but to foster the inclusion and involvement of workers with and without disabilities in getting the job done, developing social networks, and creating a supportive work of culture for all workers.

Coupled with the interest in accessing naturally occurring supports is an interest in developing personal networks for persons with mental retardation. Approaches focusing on circles of support, person-centered planning, and whole life planning highlight the importance of a wide range of persons in the identification of opportunities, the development of support systems, and the attainment of individual goals for persons with mental retardation (Butterworth et al., 1993). The significance of personal networks has been reinforced by research reporting that their use is the most effective strategy in finding work for persons with disabilities (Temelini & Fesko, 1996). The development of personal networks is an emerging approach that can be used to increase job opportunities and identify community resources that can support individuals with mental retardation.

Strategies linking personal networks with natural supports are showing greater promise for job success for persons with mental retardation. Studies are showing a higher level of satisfaction for the individual with a disability and co-workers, greater earnings, and increased length of employment when personal networks and typical supports are used both to access the job and to develop skills on the job (Mank, 1994; Temelini & Fesko, 1996). Though not necessarily a solution to the high rate of unemployment for persons with mental retardation, the use of natural supports and personal networks can certainly play a role in increasing their access to and retention of employment.

The development of personal networks is a process that begins in the early years and is enhanced by the inclusion of students with disabilities in the typical classroom setting. In the early school years, students with and without disabilities can learn together, develop social relationships, and realize each others' skills and abilities (McGregor & Vogelsberg,

1998) This same interaction in later school years can lead to more cooperative planning about adult years and involve students with and without disabilities in the identification of interests and preferences. The changes in the transition planning process, with the need to begin transition planning at age 14, have led to a greater awareness of the role that educators and students can and must play in the movement from school to work. The emphasis on service learning and the recognition that education is intimately tied to employment confirm the central role that schools play in preparing these individuals for adult life.

Along with growing interest in the development of networks and the use of natural supports, a parallel expansion has occurred in the use of an ecological approach to matching individual interests to the workplace. The ecological approach to employment matches the individual's interests with the employer's requirements and needs. There is a growing awareness of the need to match the individual's interests and preferences to both the job tasks and the culture of the workplace. Such an approach recognizes the importance of social and interpersonal relationships in the workplace (Kierman & Schalock, 1997) and allows for a greater opportunity to identify networks and social support resources.

Much concern has been raised not only about the high rate of unemployment for persons with disabilities but also about the nature of the jobs that are being accessed. Many of the jobs are low-wage, nonbenefited positions in service industries. Few of these jobs provide opportunities for career growth or advancement. There is an underlying assumption that individuals with mental retardation who are placed in such jobs will remain indefinitely, be pleased with such work, and not become bored with routine repetitive tasks. This perception may in some ways be an outgrowth of the concepts of sheltered workshops, where routine and repetitive tasks were the staple, or from the initial outreach efforts in which employers were told that persons with mental retardation would never get bored, always be at work on time, and

demand little in the area of job growth. Within the current work culture, job change and career development are essential parts of a person's job history. There is no reason why they should not also be a part of the course of employment for persons with mental retardation.

Concerns about the difficulty of getting a particular job may serve to discourage consumers, family members, and professionals from considering job change. In the current service delivery system, job change for persons with mental retardation is often perceived as a sign of failure rather than career growth. Often, services are "closed" once the individual is employed, so the supports that may facilitate job change are no longer available, and neither is the initial job coaching that might make a difference in success on another job. If we are to consider that persons with mental retardation are to have the same opportunities as persons without disabilities, then job coaching and the support for job change must be available. The concept of closing a case, as in the public vocational rehabilitation system, and of using sheltered workshops as a safety net when job change occurs are two concepts that must be changed. Permanent eligibility for and availability of supports, not at the time of job termination but in the planning process for accessing jobs or changing jobs, must be developed. Career growth is an essential element of reaching the goal of economic independence, is a form of recognition of the employee's own growth and development, and is a means toward expanding his or her social support network.

Finally, in any discussion of emerging trends in the employment of persons with mental retardation, it is essential to consider *self-employment* and *joint ownership*. Although considerable concerns about the option of self-employment have been raised, it may offer an additional avenue to an effective match between individual interests and actual job tasks. Some initial data are showing that although self-employment in general does have some risk, the level of risk (business failure) is much less than what has been reported in the popular literature (Aley, 1993). Other studies have re-

ported that, for some individuals with disabilities, self-employment is a viable option (Arnold & Seekins, 1994). For persons with mental retardation, concerns about the ability to make good business decisions are often raised. As in the case of both person-centered planning and social network development, there are opportunities for others to help the individual with mental retardation in decision making, budgeting, and other potentially difficult areas.

The option of self-employment should not be a primary focus for persons with mental retardation. Rather, it is a way of viewing persons with mental retardation as bringing skills and abilities rather than limitations and incapacity. In some instances persons with mental retardation may be aligned with a co-owner who handles the development of the business side while the individual with mental retardation is more actively involved in the production side of a small, jointly held self-employment operation.

Future Employment Opportunities: Dreams Can Come True

This final section reflects some of the dreams I see for the 21st century for persons with mental retardation. Some of these dreams will require a change in perspectives and others the adoption of new approaches to accessing and supporting individuals with mental retardation in employment. Some of the key changes include the following:

The change in exception: Employment is a viable and necessary goal and should be included as an outcome in all transition plans. Rather than not being included in the workforce statistics by the Department of Labor, persons with mental retardation should be reported as unemployed and part of the group of job seekers who would benefit from generic employment and training services and supports. The safe harbor of sheltered employment must be exposed as a setting that does not contribute to the independence, productivity, or integration of individuals with mental retardation. Net-

working and personal networks must be developed in early years, thus fostering continuous opportunities for inclusion of persons with mental retardation in all major life activities.

Change in performance indicators: The expectation among those states that purchase services for persons with mental retardation must reflect changes in how services are provided, from the standpoint of who directs the service, how services and supports are directed, and where such supports are offered. Performance contracting, with integrated employment for all serving as the desired outcome, is an effective strategy for changing the community rehabilitation provider system and increasing the number of individuals with mental retardation who enter employment.

Changes in funding and support: Flexible funding designs—including vouchers; cash payments directly to nontraditional support resources (employment services, headhunter organizations, One-Stop Career Centers, personal networks, and employer supports); and the development of informal networks of support—will lead to more effective job placement, community inclusion, and ongoing supports for persons with mental retardation.

Changes in employment strategies: Effective partnerships between (a) persons with mental retardation and co-workers, (b) employers and persons with mental retardation, (c) employers and community provider networks, and (d) persons with mental retardation and community providers are all necessary. These partnerships must be viewed as mutually beneficial and not one-sided, as they have been in the past. Partnerships lead to positive outcomes for each of the partners, and thus all partnerships must look at all stakeholders as equal contributors and equal beneficiaries.

There are some approaches that ought to be adopted that will lead to more effective employment opportunities in the 21st century for persons with mental retardation. These approaches are no different from those that have been recognized for persons without mental retardation and include the following:

- The adoption of a lifelong learning strategy, whereby we acknowledge that learning is continuous and occurs over a lifetime, not only during the formal academic years.
- The adoption of a career development strategy, where the first job ought to lead to the second and the second to the third, each providing greater economic independence and greater recognition by co-workers of contributions made.
- The adoption of inclusive designs in workplace supports whereby persons with disabilities support persons without disabilities, and vice versa, when networks and co-worker supports are available to all persons.
- The adoption of a universal application, where any modifications within the workplace, such as job accommodations, job modifications, and technology, have a positive influence on all employees, and where technology, external supports, and other resources have a direct benefit for all employees, not only those with disabilities.

In conclusion, this article has tried to reflect some historical perspectives on employment, current activities regarding employment, and some future possibilities for persons with mental retardation in the 21st century. Although the economy is booming and persons with mental retardation are showing some gain in the world of employment, we have a long way to go. I am optimistic that, given continued recognition of persons with mental retardation as contributing members of society, the reality of the 21st century will be one of greater employment opportunities for persons with mental retardation in jobs that are not merely entry-level but that offer benefits, security, and a chance to be a contributing member of a workforce and a social culture within the workplace.

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Special Article

Getting a job, sustaining a job, and losing a job for individuals with mental retardation

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The employment rate for 7,750 individuals with mental retardation served by the South Carolina network of Disability and Special Needs local Boards was 16.9% during 1996–1998. The job loss rate for these individuals was 28%; thus 72% of the individuals employed during 1996 and 1997 had a job in the subsequent year. Restaurant hostess/cashier, retail, and food preparation had the lowest rates of hiring and the lowest rates of loss for all types of employment. The job categories with the largest number of individuals with MR were janitor/laundry/cleaning followed by dishwasher/bus-person. Although decisions about employment should be made based on individual abilities, goals and desires, policymakers can adopt a strategy for monitoring the rate of obtaining new jobs and job loss to evaluate the performance of local employment support providers.

Keywords: Mental retardation, employment

1. Introduction

Community service providers for individuals with mental retardation need to understand the dynamics of employment in order to develop strategies to improve the overwhelming underemployment of this group. Individual decisions should be made on the basis of talent and desire; however, policymakers need to monitor

rates of employment, turnover and categories of employment. Focusing on employment rates at one point in time is a starting point but we also need to know what predicts obtaining, sustaining, and losing a job on an individual and aggregate level. If a person-centered approach to employment is successful there should be greater variety in jobs obtained in the future. The purpose of this paper is to describe a statewide approach to monitoring employment.

The impact of a number of personal and community characteristics for individuals who were employed for at least six months during a three-year period were analyzed. Previous studies have reported slow improvement in the number of individuals with MR and associated disabilities with jobs. The percentage of adults with mental retardation in competitive employment rose from 16% in 1986 to 18% in 1991 [1,5,11,14]. Other reports indicate that approximately 30–40% of adults with mental retardation were employed in 1994–1995 [1,12,15]. However, we do not know what proportion of newly hired individuals replace those who exit from employment in the same period. Studies have identified factors associated with employment such as severity of the disability, co-existing conditions, IQ score, and age [2,7,10]. Other researchers have quantified the impact of supports, both formal and informal [3,6,8,9,18] on the ability to sustain employment. Finally, a few studies have looked at a combination of personal and environmental factors to explain overall employment, without regard to the flow of individuals in and out of the job market [7,10].

A systematic approach to monitoring employment fostered by a local provider network is used to analyze predictors of getting a job, sustaining a job for more than one year, and losing a job. This research was done within the framework of person-centered-planning for individuals with disabilities, which drives all programs within the South Carolina Department of Disabilities and Special Needs. We recognize that obtaining a job

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should be based on the interests and desires of the individual and not on a market driven approach of supply and demand. However, individuals, families, friends and staff should be aware of as much information as possible as they approach employment considerations.

This study reports on some findings from an annual review of employment for the network of local community service providers in South Carolina. Each year the employment rates for all local provider organization are calculated and targeted questions are addressed so that all parties can continue to learn about the employment status of individuals with disabilities in the state. The study hypothesis was that individuals who obtained a job during the study period were more likely to be male, have higher IQ scores, have fewer behavior problems, and be younger than the group who did not obtain a job during the period.

2. Method

2.1. Participants

The South Carolina Department of Disabilities and Special Needs (DDSN) served approximately 13,360 individuals with mental retardation, during the three-year period, January 1, 1996–December 31, 1998. DDSN provides financial support and technical assistance to 38 local providers (Boards) to provide residential, day program, job development, training and coaching services, service coordination, and other supports to individuals with mental retardation and their families. The case definition of mental retardation for this analysis relied on the DDSN eligibility criteria: "Individuals with substantial deficits in cognitive ability and deficits in two adaptive skill areas, who sustained their disability before the age of 21, with legal residence in South Carolina".

We included 7,750 individuals, ages 19–64 years with IQs in the range 20–80 who received services from DDSN during 1996–1998. The employed group had 1,834 individuals and the comparison group had 5,916 individuals. The comparison group included individuals who worked during the study period but failed to sustain a job for at least six months with a weekly wage of \$50 or more.

2.2. Measures

The outcome of interest was employment earnings of \$50 per week or more for a minimum of 6 months during the three-year period, 1996–1998. The case definition for the three employment statuses were:

- *Obtained a job*: No record of employment during 1996 followed by employment during 1997 or no record of employment during 1996 and/or 1997 followed by employment in 1998.
- *Lost a job*: Record of employment during 1996 or 1997 followed by no record of employment in the subsequent year. This would include individuals who had a job in 1996, lost it and remained unemployed during 1997, and obtained a new job in 1998.
- *Sustained a job*: Record of employment during two or three years, without job loss. The individuals could have different jobs during the interval if there was no gap in their employment lasting more than 3 months during the study interval.

An individual was counted once in each category, although he/she might be counted in two categories. For example, an individual with a job in 1996 would be counted as "lost a job" if they did not work in 1997 and they would be counted as "obtained a job" if they were re-employed during 1998.

The data were collected from two sources. A form was mailed to the Executive Director of each local Board to obtain information about the names of individuals who were employed during the study period, the time period the individual was employed, their role, the employer, whether a job coach was used, and their typical weekly salary. The Executive Directors assigned the task of form completion to the Board staff; the form was usually completed by a job developer, job coach and/or service coordinators. We obtained the name of the individuals who filled out the form so we could ask for additional information if it was unclear or incomplete. When there was missing, incomplete or contradictory information, the study staff called the local provider for resolution. In most cases one call was sufficient to resolve the issue however in some cases numerous follow-up calls over a series of weeks were necessary to obtain complete information. The second source of data was from the computerized service tracking system that is maintained at the central DDSN office, with terminals for entry at each Board. The computerized data included information about type of residence, birth date, gender, race, IQ and adaptive score, presence or absence of epilepsy, autism or other co-existing conditions. This computerized record was merged with the data obtained from the provider.

2.3. Statistical analysis

We analyzed the three employment outcomes using predictor variables for personal traits and the attributes

of the community in which he/she resided. We used SAS 7.0 (SAS, Cary N.C., 1989) to conduct univariate, multiple linear, and logistic regression modeling. Results of the univariate analysis allowed us to observe the relationship between two variables at a time. We tested the association of the predictor variables with employment rates, using Pearson Correlation Coefficients. Variables which met the criteria of having a correlation > 0.5 and a $p < 0.05$ were entered into the multivariate models using backward elimination. The multiple regression analyses examined relationships among a number of variables and controlled for other characteristics. We used employment of 1,834 individuals to identify the characteristics associated with obtaining, losing, and sustaining employment during the period. We used logistic regression models to analyze the variables since the outcomes were dichotomous (obtain, do not obtain; lose, do not lose; sustain; do not sustain employment).

In the logistic regression models we established data-based risk groups and looked at the relationship between each variable and the employment outcomes using South Carolina data [16]. We also explored the relationship of seven variables associated with poverty: gross income per capita, percent of residents living in poverty, percent of residents on food stamps, percent of residents finishing high school, percent of residents with telephones, percent of unemployed residents, and percent of residents on Medicaid [16]. When the partial Pearson Correlation Coefficient for a variable was higher than 0.9 with at least two other variables we eliminated it from the logistic models. Percent food stamps and percent Medicaid were eliminated on this basis.

Logistic regression models computed the relative likelihood that the three employment statuses were influenced by the variable in the model. We removed variables from the full model using maximum likelihood estimation theory. One variable was taken out of the model at each iteration, using the likelihood ratio test, the standard method for model reduction. The Odds Ratio tells us the increased likelihood of employment that can be expected for an individual over the baseline value of the characteristic.

We used a Scheffé family multiple comparison statistical test, using a p -value less than 5%, to detect a difference in the sustained/lost employment ratio. Significant p -values ranged from 0.018 to 0.029 depending on the size of the sample.

3. Results

The employment rate for the 7,750 individuals in the study group was 16.9% during the study period. The individual characteristics of the study group are summarized in Table 1. The mean age (and standard deviation) of the employed group was 36.3 years (S.D. 9.8) and the mean IQ was 54.0 (S.D. 12.9). The unemployed comparison group had a mean age approximately one year older and a mean IQ of 46.64 (S.D. 15.46). In the two groups approximately 51–54% of the individuals were African-American and 45–48% were White. The employed group was significantly more likely to be male and have fewer individuals with seizures, autism and behavior problems.

The community characteristics, shown in Table 2, were assigned to each individual based on county of residence. All individuals in the study group received their job coach and other support services from their local Board (usually in the county where they resided). The mean county size did not differ for the individuals who had jobs during the three-year study period compared to individuals with MR who were also served by the county Boards but did not obtain employment. Likewise, there was no significant difference in the percent of county residents with MR served by the Boards compared to the county population. Approximately 1.2% (S.D. 0.4) of the residents were served by the local Board for MR services in both sets of counties. The typical Board served 770 individuals although there was a large standard deviation of 601. The smallest Board served 111 adults and the largest served 2139. The proportion of African-Americans in both sets of counties was approximately 34 percent. The county characteristics related to poverty reflect the poor status of South Carolinians. Over 16% live in poverty, the unemployment rate was on average 6.5%, and only 67% of adults completed high school. In addition, the state has over 11% of the population on Medicare and only 23% own their own homes. The percent of households with registered cars differed for those who obtained jobs, 76.4% compared to 70.2% for the group who did not obtain jobs.

Overall, as shown in Fig. 1 and Table 3, during the study period the following events occurred:

- 989 (12.8%) of the 7750 adults, 19–64 years of age with IQs 20–80, served by the Boards were newly hired during the study years of 1997 or 1998.
- 599 (28.3%) of the 2,118 individuals employed for the years 1996 and 1997 (combining 922 for 1996 and 1196 for 1997) lost their job during the following year.

Table 1
Demographic characteristics for individuals with new employment

	Employed (n = 1834)			Not employed (n = 5916)		
	Mean/SD	Number	Percent	Mean/SD	Number	Percent
Age	36.3/9.8			37.6/12.6		
19-30		554	30.2%		1956	33.1%
31-40		668	36.4%		1564	26.4%
41-50		523	28.5%		1760	29.7%
51-64		89	4.9%		636	10.8%
IQ Score	54.0/12.9			46.6/15.5		
20-40		369	20.1%		2485	42.0%
41-55		505	27.5%		1386	23.4%
56-70		846	46.1%		1777	30.0%
71-75		114	6.2%		268	4.5%
Race						
Asian		2	0.1%		7	0.1%
African-American		987	53.8%		3036	51.3%
Hispanic		2	0.1%		8	0.1%
Indian		3	0.2%		9	0.2%
Other		8	0.4%		28	0.5%
Caucasian		832	45.4%		2828	47.0%
Non-Caucasian		1002	54.6%		3088	53.0%
Caucasian		832	45.4%		2828	47.0%
Gender						
Female		756	41.2%		2812	47.5%
Male		1078	58.8%		3104	52.5%
Medical condition						
Seizures		15	0.8%		187	3.2%
Autism		23	1.3%		152	2.6%
Behavior problem		332	18.1%		1603	27.1%

Table 2
Community characteristics associated with employment

	Employed			Not employed		
	Mean	SDev	Range (min, max)	Mean	SDev	Range (min, max)
Population of Board in which individual resides 1997	175,347	143,659	13,769, 503,948	174,750	146,395	13,769, 503,948
Percent individuals with MR to Board population 1997	1.20	0.41	0.62, 2.67	1.25	0.43	0.62, 2.67
Number of Individuals served by Local Service Provider 1997	769	601	111, 2139	779	605	111, 2139
Percent minority population in county 1990	33.7	14.4	8.5, 68.9	34.0	14.8	8.5, 68.9
Percent poverty in county 1990	16.2	5.3	8.4, 35.8	16.4	5.8	8.4, 35.8
Percent completed High School in county 1990	67.5	8.4	50.9, 83.4	66.7	8.1	50.9, 83.4
Percent households with registered cars in county 1997	76.4	6.7	59.2, 97.5	70.2	22.6	59.2, 97.5
Percent unemployment in county 1996	6.5	2.7	3.3, 18.6	6.6	2.9	3.3, 18.6
Percent on Medicare 1995	11.6	1.8	5.4, 16.2	11.5	1.8	5.4, 16.2
Percent owning own home in county 1990	22.7	4.2	9.9, 28.9	22.8	4.3	9.9, 28.9

— 861 (59.0%) of the 1,460 individuals sustained jobs for at least two years during the 3-year study period (without losing a job during this period).

We looked at the individual and county characteristics that predicted being newly hired during 1997 and 1998. Getting a job during the study period happened for 989 individuals from the 7,750 adults, ages 19-64

who had an IQ 20-80, served by the Boards (Table 4). The odds of getting a job was statistically significantly better based on the following characteristics: being younger, black, male, having a higher IQ, not having seizures or behavior problems, served by a smaller board, living in a county with lower than average proportion of African Americans, higher poverty levels, higher percent high school graduates, higher percent of

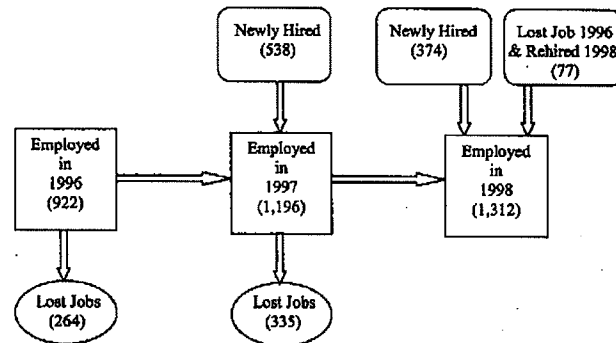


Fig. 1. From the flow chart above, we can see the New Hires group total 989 (538 + 374 + 77). The Lost Jobs group total is 599 (264 + 335). The Sustained group total is 861, which is 503 employed for all three years and 358 newly hired in 1997 and still employed in 1998.

Table 3
Employment outcomes for the three-year study period

Employment outcome	Number in numerator ¹	Number in denominator ²	Percent with outcome
Obtained jobs			
1997	538	1196	45.0%
1998	451	1312	34.4%
Lost jobs			
1996	254	922	28.6%
1997	335	1196	28.0%
Sustained jobs			
1996	658	922	71.6%
1997	861	1196	71.9%

¹Obtained jobs in 1997 are shown in Fig. 1; for 1998 this includes 374 newly hired and 77 rehired. Lost jobs in 1996 and 1997 are shown in Fig. 1; sustained jobs for 1996 were 658 who remained after subtracting 264 from the 922 who started the year with jobs. For 1997 the 861 were those who remained after subtracting 335 from the 1196 who started the year with jobs.

²These numbers are displayed in Fig. 1.

the population on Medicare, and higher percent of the county population owning their own homes.

Table 5 compares the job lost versus job sustained in the form of a ratio statistic (sustained/lost) for the study group during 1998. Only 67% of the individuals identified as employed during this study listed specific job titles and responsibilities. The job category employing the lowest ratio was janitorial/laundry/cleaning with seven jobs sustained for every one lost and the highest ratio was food preparation with 77 sustained for every one lost. It is important to note that hostess/cashier had a zero percent lost rate indicating that all 20 individuals in this category sustained their jobs. The janitor/laundry/cleaning ratio was significantly lower than the ratios for food service and retail. The government/board ratio was significantly higher than bag boy and significantly lower than food preparation and hostess/cashier. Food preparation was significantly higher than dishwasher and industrial/assembly.

The job categories with the highest job stability (hostess/cashier and food preparation) employed individuals with a mean IQ score of 58, as shown in Table 6.

The IQ score for individuals in lawn jobs was significantly lower than the IQ scores for all other jobs and the IQ scores for individuals in the food preparation jobs were significantly higher than the IQ scores for individuals with dishwasher, industrial, and janitor jobs. We also explored the hypothesis that individuals who lost jobs in each category had significantly different IQ scores compared to those who sustained jobs. The null hypothesis prevailed; there was no difference in IQ scores in any of the job categories between those who lost jobs and those who sustained them.

4. Discussion

The current study informs us that job loss for individuals with MR is a relatively common event. It occurred

Table 4
Significant predictors of employment and their relative risk for obtaining a job during 1996–1998

Variable	Direction predicting more obtained jobs	Relative risk ^b	95% Confidence interval ^c
Age (Continuous variable) (RR for 5 year increase)	Younger	0.948	0.919, 0.977
IQ (Continuous variable) (RR for 15 point increase)	Higher	1.460	1.364, 1.576
Gender	Male	0.731	0.636, 0.840
Race	Non-white	0.840	0.724, 0.975
Seizures	No seizures	0.533	0.306, 0.927
Behavior problems	No behavior problems	0.678	0.571, 0.805
Percent minority in county (RR for 5 point increase)	Lower percent minority	0.932	0.876, 0.993
Percent living in Poverty county	Higher percent poverty	1.070	1.033, 1.107
Percent with High School Education or above in county	Higher percent HS Graduation	1.069	1.054, 1.085
Percent on Medicare in county	Higher percent on Medicare	1.083	1.038, 1.131
Percent owning homes in county	Higher home ownership	1.042	1.010, 1.075
Population of Board (RR for 500 person increase)	Smaller population of board	0.818	0.670, 0.999

^a Derived from Multiple Logistic Regression Analysis.

^b Adjusted for confounders and Effect Modifiers.

^c Using the Method of Maximum Likelihood Estimation.

Table 5
Job categories of employment during a one year period, and p-values showing significant differences between categories

	Ratio	Lost	Total	%Lost	Food	Gov	Lawn	Bag Boy	Dish	Industrial	Retail	Janitor
Hostess/Cashier	n/a	0	20	0.00%	0.3099	0.0225	0.1449	0.1622	0.0941	0.0892	0.2001	0.0540
Food Prep (Restaurants)	77.0	1	78	1.28%	x	0.0007	0.0975	0.1346	0.0300	0.0159	0.1975	0.0068
Government/Board	22.0	1	23	4.35%	x	x	0.0373	0.0147	0.0678	0.0852	0.1442	0.2092
Lawn Maintenance	20.5	2	43	4.65%	x	x	x	0.4523	0.2669	0.2504	0.2413	0.1168
Bag Boy (Supermarkets)	19.4	5	102	4.90%	x	x	x	x	0.2087	0.1447	0.3328	0.0479
Dishwasher/Bus Person	10.9	17	202	8.42%	x	x	x	x	x	0.4968	0.1001	0.0497
Industrial/Assembly	10.4	13	148	8.78%	x	x	x	x	x	x	0.4089	0.1370
Retail	9.6	5	53	9.43%	x	x	x	x	x	x	x	0.0276
Janitor/Laundry	7.3	23	190	12.11%	x	x	x	x	x	x	x	x
Other	14.0	2	30	6.67%	x	x	x	x	x	x	x	x
Total	11.9	69	889	16.00%								

at a rate of approximately 28% during the study period. This underestimates the frequency of job loss since we could only identify job loss after a minimum of six months of employment so the jobs lost during the first six months of employment were not counted. However, the proportion of the individuals who sustained a job from one year to the next was approximately 72%. This is an important finding since 34–45% of eligible individuals in this study obtained new jobs during 1997 and 1998, respectively.

One of the most important issues facing individuals with disabilities, family and friends, job coaches, and job trainers is job maintenance. It is very frustrating to train an individual for a position that he/she leaves in a short time. The consequences for the individual and his/her supporters could be feelings of failure and disappointment. If the employment ended unpleasantly the employer might be reluctant to employ another individual with a disability and this has long-term consequences for others.

South Carolina is a rural state with only four large population centers. Thus, we considered the percent

households with registered cars in the county an important community characteristic since public transportation is limited. Other states or communities might not need to use the same community characteristics in their models. The results in Table 5 should be replicated in other states for longer time periods.

Individuals with MR, family members, and staff need to know which job categories have the highest and lowest rates of hiring and the associated job loss to job sustained ratios. This will help them direct their efforts toward careful job selection, training and support for individuals based on their talents and interests. This report is intended to inform individuals about the importance of monitoring the status quo so we can measure progress and develop policies that lead to system change. Individual decisions should be based on the abilities, goals, and desires of that person but policy-makers need to see the big picture. We hope there will be more diversity of job types in the future. In our study, the job categories hiring the largest number of individuals were janitor/laundry/cleaning fol-

Table 6
Comparison of IQ scores, by Job category: Mean (Standard Deviation) and P-values for differences between job categories

	Mean	SDev	Food	Gov	Lawn	Bag Boy	Dish	Industrial	Retail	Janitor
Hostess/Cashier	58.5	10.3	0.7372	0.6651	0.0033	0.2169	0.0547	0.1484	0.4450	0.1618
Food Prep (Restaurants)	57.7	10.9	x	0.7896	0.0000	0.1093	0.0018	0.0332	0.4630	0.0317
Government/Board	57.1	13.4	x	x	0.0114	0.4769	0.1349	0.3362	0.8135	0.3432
Lawn Maintenance	49.5	13.4	x	x	x	0.0026	0.0293	0.0039	0.0017	0.0046
Bag Boy (Supermarkets)	55.3	11.9	x	x	x	x	0.1621	0.6757	0.5275	0.6533
Dishwasher/Bus Person	53.4	12.7	x	x	x	x	x	0.2597	0.0733	0.2531
Industrial/Assembly	54.7	12.4	x	x	x	x	x	x	0.3152	0.9730
Retail	56.4	11.9	x	x	x	x	x	x	x	0.3118
Janitor/Laundry	54.7	13.1	x	x	x	x	x	x	x	x
Other	58.8	11.5	x	x	x	x	x	x	x	x
Unemployed	47.2	15.4								

lowed by dishwasher/bus-person. Other job categories had higher ratios, but smaller numbers of individuals. These include restaurant hostess/cashier, food preparation and lawn maintenance. Two other job categories, bag boy in supermarkets and retail (example Wal-Mart), often associated with individuals with disabilities, had modest rates of job loss.

The study hypothesis was supported by the data since obtaining a job was more likely for individuals who were male, with higher IQ scores, fewer behavior problems, and younger than the group that did not obtain a job during the study period. We also explored the assumption that IQ scores are predictive of job placement and job loss. Table 6 indicates the range of IQ scores between all the job categories was rather narrow, with the mean ranging from 49 to 58. Most importantly, although IQ scores do influence obtaining a job it did not predict job loss in any of the categories. This implies, as most in the field would suspect, that factors other than IQ such as temperament or personality, the work environment, and peer relationships are more important in job performance.

It is critical that individuals consider their interests and abilities and use creativity in developing their employment goals. This study might inspire some to think about jobs without a tradition of hiring individuals with disabilities since the factors associated with obtaining and sustaining jobs are quite different. It is likely that the strongest predictors of sustaining a job are factors not measured in this study such as job climate, expectations, and supports for satisfactory performance. These factors need to be studied more extensively in future research. This analysis provides a framework to monitor change in employment rates, job loss rates, and job classifications since having a job is one of the most frequently stated goals of individuals with MR.

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Competitive Jobs

Competitive Employment and Mental Retardation: Interplay Among Gender, Race, Secondary Psychiatric Disability, and Rehabilitation Services

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Rehabilitation outcomes of persons with mild/moderate mental retardation were analyzed. Seven variables were used to predict one dichotomous and one continuous criterion variable: work status at closure and level of income, respectively. Findings indicated that consumers with mild/moderate mental retardation who received job placement services achieved competitive jobs at a significantly greater rate than those who did not. Results are presented for each criterion variable and the implications of the findings for service and research are discussed.

For most adults, employment is the means by which they obtain economic self-sufficiency, a route to social identification, and a source of personal networking. Thus, employment is a critical factor associated with independence and community integration. According to Kiernan (2000), competitive employment is a way in which individuals support their lifestyles, develop friendships, and identify themselves as individuals. Competitive jobs allow vocational rehabilitation (VR) consumers to acquire transferable skills as well as earn higher wages (Moore, 2001a). However, consumers with mental retardation have yet to fully realize those benefits.

For many years, sheltered workshops were viewed as an ideal work setting for persons with mental retardation (Moore, 2001b).

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Although these settings have advanced previous concepts of employment for persons with mental retardation, they may not afford such persons an opportunity to become economically self-sufficient (Whitehead & Marrone, 1986). Additionally, sheltered workshop environments do not allow persons with mental retardation the opportunity to develop peer networks involving persons other than those with disabilities (Kiernan, 2000). Therefore, a sheltered workshop is less satisfactory as an outcome than competitive employment.

Various mediating variables affect the interests and outcomes for competitive employment for persons with disabilities, particularly those with mental retardation. An individual's ability to obtain and maintain competitive employment is influenced by the individual, his or her significant others, as well as types of VR services provided (Moore & Schroedel, 2000). Each of these variables interacts to either limit or increase the quality of employment opportunities. Devieger and Trach (1999) found that personal and parental involvement in the vocational rehabilitation process most often resulted in employment outcomes associated with self-employment and continuing education for consumers with mental retardation.

Conversely, school and agency personnel are factors inversely associated with employment outcomes of persons with mental retardation. Specifically, the efforts of school and agency personnel may be less effective for successfully transitioning students with mental retardation from school to work. School and VR agency personnel may not utilize best practices for transitioning students with mental retardation from school to competitive work. For example, individualized education plans (IEPs) for students with mental retardation are required for such students who are 16 years of age. Lichtenstein and Michaelides (1993) found, in a case study on school to work transition, that many students with men-

tal retardation do not participate in their own IEP meetings. Moreover, the researchers reported that many IEPs for students with mental retardation stated goals addressing vocational education, job training, and post-secondary outcome. However, no short term objectives or even timelines were associated with the goals. Findings in a study by Devieger and Trach (1999) revealed that school and agency efforts most often resulted in sheltered employment.

Studies (i.e., Schalock, Kiernan, & McGaughey, 1993; Wehman, Kregel, & Seyfarth, 1985) have investigated the rates at which consumers with mental retardation achieve competitive jobs versus sheltered workshop employment. Schalock et al. (1993) found that a majority of participants were employed within a sheltered workshop setting. More specifically, 45% of the sample was employed in a sheltered workshop, 41% in a day activity, 9% in supported employment, 3% in time-limited training, and only 2% in competitive jobs.

Researchers (i.e., Moore, 1998; Moore, Feist-Price, & Alston, in press; Moore, Flowers, & Taylor, 2000) have likewise examined the impact of several consumer and service variables on level of income (i.e., weekly earnings at closure) for persons with mild and moderate mental retardation. For example, Moore (1998) and Moore et al. (in press) reported that race was not significantly associated with level of income. However, in regard to vocational rehabilitation (VR) services, Moore (1998) and Moore et al. (2000) reported that those consumers who were provided with business and vocational training as well as maintenance services achieved higher levels of income. It should also be noted that both studies were based on the RSA-911 database representing fiscal year 1997 (October 1, 1996 through September 30, 1997).

Although studies on work status at closure (i.e., Schalock, Kiernan, & McGaughey, 1993) and level of income (i.e., Moore et al., 2000) exists for persons with mental retardation, there is relatively little applied empirical research focusing on the relationship between consumer characteristics (i.e., gender, race, psychiatric disability), VR services, and work status at closure (i.e., competitive job or non-competitive jobs). Therefore, the purpose of this study was to investigate the relationship between consumer and service variables and the rehabilitation outcomes as measured by work status at closure and level of income. More specifically the following research questions were addressed:

a) Are gender, race, secondary psychiatric disability, business and vocational training, adjustment training, on-the-job training, transportation, maintenance, and job placement significantly related to rehabilitation outcome as measured by work status at closure (i.e., competitive job or other setting)?

b) Are gender, race, secondary psychiatric disability, business and vocational training, adjustment training, on-the-job training, transportation, maintenance, and job placement significantly related to rehabilitation outcome as measured by level of income?

Method

Sample

The population for this study included 838 African American and Caucasian consumers with mild (major disability code = 530) and moderate (major disability code = 532) mental retardation closed into status 26 (i.e., successfully rehabilitated) by a state VR agency in a mid-western state during fiscal year 1997 (Oct 1, 1996 through September 30, 1997). A random sampling technique was used to select 30% (n = 253) of the 838 cases for analysis. The total sample (n=253) was utilized to evaluate the relationship between gender, race, secondary psychiatric disability, VR services and rehabilitation outcome as defined by work status at closure and level of income.

Data Collection

The principal investigator submitted a formal request for consumer case records to the Rehabilitation Services Administration, U.S. Department of Education, and was provided the national RSA-911 database records for fiscal year 1997. The current study was based upon records representing a mid-western state that were extrapolated from the obtained national RSA-911 database. The database is a comprehensive, standardized system of statistical reporting on the complete rehabilitation process for every individual coming into contact with that process, for first referral to final closure (Rehabilitation Services Administration, 1995). Consumers who are closed rehabilitated (status 26) are further coded within one of six specific work status at closure categories: competitive employment, extended employment, self-employment, state-agency-managed business enterprises, home-maker, and unpaid family worker. Because this study sought to evaluate consumers on the basis of whether they obtained competitive jobs or not, cases which were not closed into the competitive employment category were collapsed into the non-competitive jobs category. As a result, there were two categories of the work status at closure criterion: competitive employment and non-competitive employment. One criterion for competitive employment is a minimum competitive wage. Since consumers who are self-employed may not earn a minimum competitive wage, self-employment was not included in the competitive employment category. In short, including self-employment in the competitive employment category would have further broadened the operational definition of competitive employment and perhaps compromised the worthiness of the current study.

Data Analysis

Because one criterion variable under consideration was recorded on a nominal measurement scale (i.e., work status at closure) and the other an interval scale (i.e., level of income), we conducted two types of statistical analyses: logistic regression and multiple linear regression analyses. Based upon Cohen and Cohen's (1983) approach, logistic regression was the most appropriate analysis for evaluating the relationship between two or more predictor variables and a dichotomous criterion variable (i.e., work status at closure). Multiple linear regression analysis was selected as the most appropriate for evaluating the relationship between any two or more predictor variables and an interval criterion variable (Bordens & Abbot, 1999; Cohen & Cohen, 1983). Logistic regression analysis uses the explanatory variables (i.e., gender, race, secondary psychiatric disability, VR services)

to predict the probability that the response variable will take on a given value. Multiple linear regression analysis uses the explanatory variables to predict the mean of the continuous response variable at any specified set of values for the explanatory variables. The Statistical Package for the Social Sciences, logistic regression and multiple linear regression procedures (SPSS, 1989), were used in these calculations.

Results

Participants

All members of the sample were classified by the state rehabilitation agency as having one of the following primary disabilities: (a) mild mental retardation or (b) moderate mental retardation. Fifty-three percent of the participants were males. Of the total sample, 13% ($n=32$) of participants were African American and 87% ($n=221$) were Caucasian. Other racial and ethnic members of under-represented groups were not included in the analysis because of low incidence in the sample. Interestingly, 15% of the sample possessed a secondary psychiatric disability while the other 85% did not report the presence of a secondary psychiatric disability.

VR Services

Rehabilitation service variables, unlike consumer characteristics, are not relatively fixed and can be manipulated to produce better rehabilitation outcomes (Schwab & DiNitto, 1993). Operational definitions for such services follow as outlined in the Rehabilitation Services Administrations' Information Reporting Manual for the Impact Reporting System (RSA-911) (pp. 33-35). Business and vocational, or non-collegiate post-secondary education, includes training in business/commercial school or a vocational/trade school. Training in the business/commercial school or college would prepare individuals for work in the areas of office practice, typing, word processing, bookkeeping, accounting data processing, etc. Maintenance services are provided to cover additional costs incurred by consumers while they are undergoing rehabilitation services. On-the-job training occurs when a consumer works for wages while simultaneously learning skills of a job.

Transportation is any service provided or arranged for by the State agency to enable individuals to arrive at appointments for assessment, medical services, training, or any other rehabilitation service, as well as to permit consumers to get to work. Adjustment training helps consumers adjust to a particular situation hindering their ability to work. Included would be work conditioning, developing work tolerance, mobility training, remedial training, literacy training, lip reading, Braille, etc. Finally, job placement services are rendered when individuals are referred to and are hired by employers.

Very few of the sample received either business and vocational training, on-the-job training, maintenance, or adjustment training (see Table 1). In contrast, transportation and placement, services were received by larger percentages of the sample, with placement services being the most frequent service provided (66.8%).

Table 1. Services Received by the Sample

Service Received	Frequency	Percentage
<u>Business and Vocational</u>		
Yes	10	4.0%
No	242	96.0%
<u>Maintenance</u>		
Yes	18	7.1%
No	234	92.9%
<u>On-The-Job Training</u>		
Yes	2	.8%
No	250	99.2%
<u>Transportation</u>		
Yes	70	27.7%
No	183	72.3%
<u>Adjustment Training</u>		
Yes	18	7.1%
No	234	59.2%
<u>Placement</u>		
Yes	169	66.8%
No	84	33.2%

* Note: Totals may vary due to missing data.

Work Status at Closure

First, the distributions of the predictor variables were examined. Ideally, those variables should exhibit an equal (50/50) distribution. Although distributions of 80/20 are appropriate for logistic regression analyses, variables with distributions greater than 80/20 (e.g., 95/5) should be excluded from the procedure (Cohen & Cohen, 1983). Thus, similar to procedures implemented in studies conducted by Bullis, Davis, and Johnson (1995), Moore (2001a), Moore et al. (2000) and Moore (in press), predictor variables with distributions greater than 95/5 were in fact excluded from analysis. Because they did not meet this criterion, business and vocational training and on-the-job training were excluded from further analysis. Second, phi correlations among gender, race, secondary psychiatric disability, maintenance, transportation, adjustment training and placement were calculated. Intercorrelation among the independent variables ranged from .00 to .26. These values were sufficiently low to conclude that there was no multicollinearity among the independent variables.

A one-step or simultaneous logistic regression analysis addressed Research Question 1 by investigating the linear relationship between gender (men=0, females=1), race (African American=0, Caucasians=1), secondary psychiatric disability (no=0, yes=1), maintenance (no=0, yes=1), transportation (no=0, yes=1), adjustment training (no=0, yes=1), job placement (no=0, yes=1) and rehabilitation outcome as measured by work status at closure (non-competitive jobs=1 and competitive jobs=2). The statistical analysis for the relationship between the service variables and work status at closure revealed the following results: Of the seven predictor variables entered into the logistic regression,

only job placement ($r^2 = .04$, $Wald = 9.88$, $p = .007$, $B = 1.07$) was identified as being positively associated with achieving competitive jobs (see Table 2).

Although partial correlations for the relationship between job placement and competitive jobs appear to be minimal in statistical terms, small effect sizes for such relationships (i.e., $r^2 = .04$) can be important (Prentice & Miller, 1992). Practically speaking, in this mid-western state and within the ranges of the variables studied, having received job placement services appears to make an important difference with respect to achieving competitive jobs. On the other hand, results suggested that transportation ($r^2 = .03$, $Wald = 7.43$, $p = .006$, $B = -.95$) and adjustment ($r^2 = .03$, $Wald = 8.58$, $p = .001$, $B = -1.79$) were inversely related to achieving competitive employment. That is, consumers who were provided with transportation and adjustment were more likely to achieve non-competitive jobs.

Table 2. Summary Table for LR Analysis for Consumer and Service Variables on Work Status at Closure for persons With Mild and Moderate Mental Retardation (df= 1, 245).

Consumer and Service Variables	Beta	SE	r ²	Prob> F
GENDER	.06	.33	.00	.853
RACE	-.62	.46	.00	.182
PSYCHIATRIC	-.33	.46	.00	.474
MAINTENANCE	.74	.71	.00	.294
TRANSPORTATION	-.95	.35	.03	.006*
ADJUSTMENT	-1.79	.61	.03	.001*
JOB PLACEMENT	1.07	.34	.04	.007*

*p<.01

Income

Participants' income ranged from \$0 to \$500 ($m = \$113.72$) per week ($SD = \78.57, median = \$95; mode = \$95). Excluding the extreme values (0\$ and \$500 per week), the average wage per week was \$112.63 ($n = 251$). A one-step multiple linear regression analysis addressed Research Question 2 by investigating the relationship between gender (men=0, females=1), race (African American=0, Caucasians=1), secondary psychiatric disability (no=0, yes=1), maintenance (no=0, yes=1), transportation (no=0, yes=1), adjustment training (no=0, yes=1), job placement (no=0, yes=1) and rehabilitation outcome as measured by level of income. Of the seven variables entered into the multiple regression equation, none were significant predictors of higher levels of income (see Table 3). That is, no statistically significant differences were noted for achieving higher levels of income based on gender, race, the presence of a secondary psychiatric disability or whether or not consumers received maintenance services, transportation, adjustment training, or job placement services.

Discussion and Implications for Rehabilitation

The results of the current study identified job placement as a service that was positively associated with achieving competitive

jobs though not with level of consumer income. Specifically, those consumers with mild/moderate mental retardation who were provided with job placement services were slightly more likely to achieve competitive jobs when compared to those who did not receive such services. The importance of providing job placement services and the subsequent positive impact on employment outcomes are well documented throughout the empirical rehabilitation outcome literature. For example, Moore (2001c) reported that 84% of those consumers who were provided with job placement services were closed successfully compared to approximately 70% of those consumers who did not receive such services. Specific to persons with mild/moderate mental retardation, Moore et al. (2000) found that consumers who received job placement services were more likely to achieve closure success when compared to those consumers who were not provided with such services.

With the benefits of providing such services in mind, the researchers discuss the following implications for current rehabilitation practice. First, VR counselors might consider informing consumers with mild/moderate mental retardation of the availability of job placement services by incorporating such information in their individualized plans for employment. This action might enhance the numbers of such consumers who achieve competitive jobs.

One traditional model of job placement utilized by rehabilitation counselors and job placement specialist for persons with mental retardation is supported employment (Szymanski & Parker, 1996; Trochim, Cook, & Setze, 1994). The goal of supported employment is to "successfully" place persons with severe disabilities, including those with mental retardation (Trach & Rusch, 1989). The supported employment model uses a place-then-train approach in which the emphasis is first on locating an inte-

Table 3. Summary for MLR Analysis for Service Variables on Income for persons with Mild and Moderate Mental Retardation (df= 1, 245).

Consumer and Service Variables	Beta	SE	r ²	Prob> F
GENDER	-9.65	9.87	.01	.329
RACE	26.14	15.26	.01	.088
PSYCHIATRIC	-.12	13.94	.00	.993
MAINTENANCE	35.00	19.30	.01	.070
TRANSPORTATION	-25.68	11.35	.01	.025
ADJUSTMENT	-30.03	20.34	.01	.140
JOB PLACEMENT	9.40	10.61	.01	.376

*p<.01

grative setting, then placing the consumer and providing training and support needed to maintain competitive employment. Tabulations based on the current RSA-911 database indicated that only 49% ($n=123$) of participants with mild or moderate mental retardation received supported employment. Although such supported employment services are typically reserved for persons with severe/profound mental retardation, rehabilitation counselors might consider identifying more consumers with mild/moderate

mental who could benefit from supported employment vis-a-vis job placement.

Implications for Future Research

Because this study was limited to a mid-western state, the results cannot be generalized to other geographical locations that differ in regard to population and ecology. From a population validity standpoint, the population of consumers with mild and moderate mental retardation may differ in terms of the socio-economic level of their families from state to state. From an ecological perspective, one must use caution when generalizing findings to those states that do not have a similar economy (e.g., Mississippi) or similar unemployment rate.

This study lacked any measure of the quality of each service provided, thus future research is needed that utilizes measures of quality of services received. For example, instead of an archival study, one might actually go out to the rehabilitation service agencies and perform direct face-to-face interviews with consumers receiving certain services. The researcher(s) might then survey consumers about the quality of the service they received. Variables that can be used as indicators of quality of services might include whether services were: (a) provided in a timely manner, (b) conducted for a duration appropriate for the consumer's rehabilitation need, and (c) coordinated effectively. Future research questions may be:

- (a) Is quality of rehabilitation services significantly related to rehabilitation outcome as measured by work status at closure?, and
- (b) Is quality of rehabilitation services significantly related to rehabilitation outcome as measured by level of income?

The tremendous differences in functional capabilities between persons with mild and moderate mental retardation warrant further attention as such differences could limit the current findings external validity. Categories of mental retardation take into account an individual's physical and social development, and correspond roughly to IQ scores (American Association on Mental Retardation, 1992). Individuals with mild mental retardation, those with rough scores between 53 and 70, are able to learn academic and prevocational skills with some special training. Persons with moderate mental retardation, those with rough scores of 36 to 52, are able to talk and take care of their own basic needs, to learn functional academic skills, and to undertake semi-skilled work under sheltered employment. One could argue that individuals with moderate mental retardation may require more or different types of services when compared to persons with mild mental retardation. The composition of the current sample (i.e., persons with mild and moderate mental retardation) might not provide data that accurately identify the service needs of each individual group. As such, future researchers could address worthy questions regarding rehabilitation outcomes by evaluating rates of competitive employment either for persons with mild mental retardation or moderate mental retardation.

The current study evaluated the relationship between gender, race, the presence of a secondary psychiatric disability, VR ser-

vices, and rehabilitation outcomes as defined by work status at closure and level of income, for persons with mild and moderate mental retardation. However, persons with severe mental retardation were not included in the study. Therefore, researchers may wish to replicate the current study with the population of persons with severe mental retardation. Research questions addressed could be:

- (a) Are gender, race, psychiatric disability, business and vocational training, adjustment training, on-the-job training, transportation, maintenance, and job placement significantly related to rehabilitation outcome as measured by work status at closure (i.e., competitive job or other setting)?
- (b) Are gender, race, psychiatric disability, business and vocational training, adjustment training, on-the-job training, transportation, maintenance, and job placement significantly related to rehabilitation outcome as measured by income?

In the current study, gender, race, secondary psychiatric disability, and some VR services were not found to be significantly associated with work status at closure or level of income. However, due to minimal variability within some variables (e.g., maintenance and adjustment), such findings are plausibly a result of too many Type II errors. That is, results may have indicated a finding of non-significance when in fact relationships are statistically significant. If a sample representing 50% of consumers who received maintenance and 50% of consumers who were not provided with maintenance were compared, findings might indicate that such services are significantly associated with work status at closure. Therefore, readers should use caution when attempting to draw conclusions based on the current non-significant findings, as these variables (i.e., gender, race, secondary psychiatric disability, maintenance, and adjustment) could otherwise prove to be powerful discriminators of competitive jobs and level of income.

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